

Eddie Sleeper

From: Jim Kress <jimkress35@gmail.com>
Sent: Monday, February 12, 2018 11:40 AM
To: Rep. Gary Glenn (District 98); Eddie Sleeper
Subject: RE: Overbilling Issue - I was asked to forward this additional information to you.
Attachments: Meter Accuracy and Billing Math by-William-S.-Bathgate-Jan.12-2017-.pdf

Importance: High

"But we have to prove the overbilling."

I hope you read the excerpt I sent from Bathgate's analysis. If not, I have attached it. Pay special attention to the 5th page.

We must force DTE and Consumers to explain in detail, UNDER OATH, the precise algorithm they use, i.e. "totalized", "Average of the Peaks" or whatever they are using to determine electrical consumption. The true measure of consumption is the total of the area in yellow. It's a simple numerical analysis (an integration of the consumption signal) which has historically been done, electromechanically on a continuing basis by the analog meter – i.e. it accumulated the use.

DTE and Consumers must prove the method it is using with the "smart meters" results in an identical integration of the consumption signal/ i.e. accumulation as they did with the analog meter. Anything else is a violation of their tariff and defrauding of their customers.

DTE and Consumers should be legally required to supply for every bill they issue the signal utilized for computing billing costs to every customer that demands it. They should be forced to keep this data available, provide proof they have not altered it and ensure the raw data is accessible to each customer so we can do our own analysis of consumption.

Jim

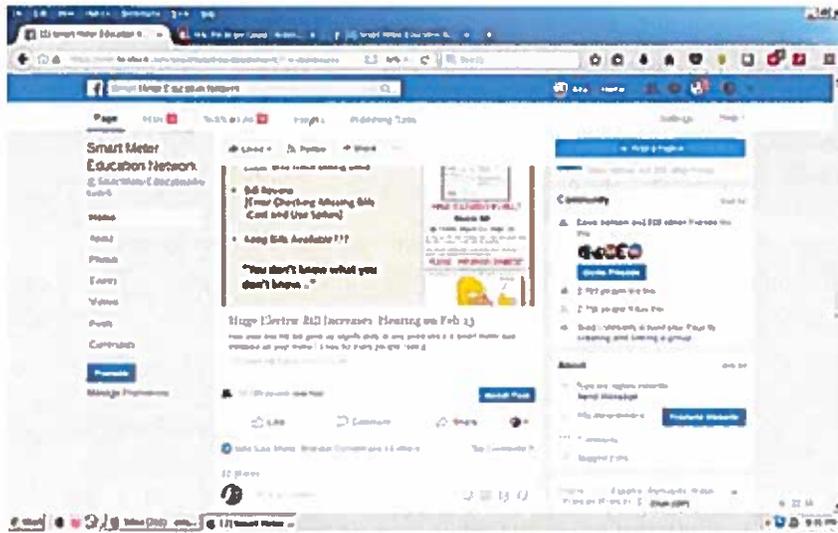
From: Smart Meter Education Network [mailto:smartmetereducationnetwork@gmail.com]
Sent: Sunday, February 11, 2018 8:44 PM
To: Brock Millard <millard4367@charter.net>; David Lonier <davidlonier@gmail.com>; David Sheldon <fdshel@gmx.com>; JeanineDeal <jeaninesusandeal@gmail.com>; John Kurczewski <irjohnk@gmx.com>; Dan Schulte <SchulteD@umich.edu>; Lola Killey <lola.killey@gmail.com>; Dan Goebel <dangoebel@gmail.com>; pamandandy22@yahoo.com; Lori Ebaugh <styd2006@yahoo.com>; W. Bathgate <bill.bathgate@gmail.com>; jim mckindles <jmckindles77@yahoo.com>; Jim Kress <jimkress35@gmail.com>
Subject: Overbilling Issue

Money Talks! We have had 10,100 hits on our post we put up at 2 p.m. on FB about the overbilling and the hearing.

We have had over 31,000 hits on the previous post that discussed this issue. The highest we ever had before was 4000. Usually we run between 2200 and 450 hits.

So--I have believed and now believe even more that this is where we can make the difference and get the bill passed. Because any digital meter can be manipulated.

But we have to prove the overbilling.



Linda Kurtz

Director, [Smart Meter Education Network](#)

Sent from a hardwired computer--no wireless whatsoever, for the sake of you, me, and the bees.

Evaluation of the ITRON Open Way AMI Meter

By William Bathgate, EE, ME

January 12, 2017

Note: This report has been written in terms that a common person with limited knowledge of electricity and engineering can understand.

About the Author

BACKGROUND: William S. Bathgate

I hold an electrical engineering and mechanical engineering degree and previously was employed through late 2015 for 8 years at the Emerson Electric Company. While at Emerson Electric I was the Senior Program Manager for Power Distribution Systems and in charge of RF and IP based digitally controlled high power AC power switching system product lines in use in over 100 countries. I was also directly responsible for product certifications such as UL, CE, PSE and many other countries electrical certification bodies. I am very familiar with the electrical and electronic design of the AMI meters in use because I was responsible for very similar products with over 1 Million units installed across the world.

I hold a DOD Top Secret Clearance, serving in Cyber Security at the USMDA and Homeland Security

I have done this analysis due to my own curiosity without conflict of interest of this new technology.

I have 40 Years work experience in design and deployment of:

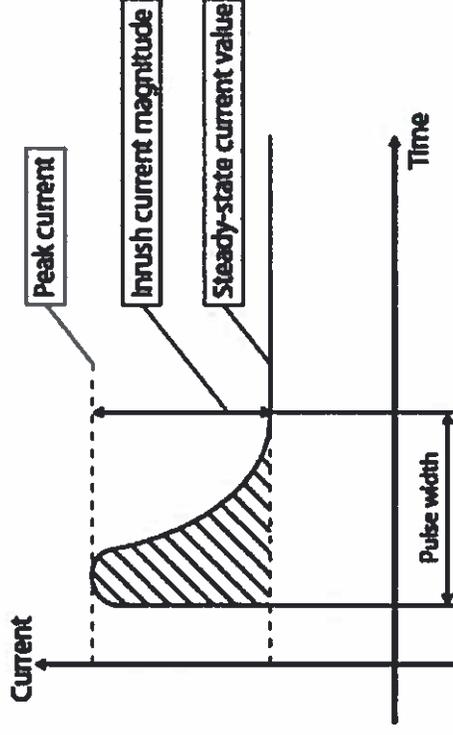
- High tech power management systems, UPS and power distribution
- Switched Mode Power Supplies
- Electrical and Electronic hardware engineering
- Computer systems engineering
- Radio Systems design and testing
- High Current and High Voltage switches
- Internet communications using both wired and wireless technologies
- UL, CE (Europe), Africa, Japan, Australia and China product safety certifications
- Cyber encryption and protection of Radio Communications using digital signals
- RFI/EMI mitigation

Meter accuracy and your bill

- The AMI meter is “accurate” based on the Navigant Consulting Report in 2010 and referenced on the ITRON web site. However within this report the extremely high rate of billing complaints after the installation of the new meters is evident and explanations were difficult to verify as to their cause. The number of complaints was dramatic This test was done in Texas with temperature ranges from ~30 to ~88 degrees.
- Control testing conditions were not well explained in this report, in particular the type of load the meter accuracy was compared to.
 - Resistive loads such as light bulbs
 - Inductive loads such as electric motors
 - No discussion on how the meters did the kWh calculation, with averaging of samples over a fixed period of time?
- The meter electronic sensor used to calculate power is called the “Hall Effect Sensor” in the AMI meter versus the “Eddy Current” sensor in the Analog meter. Both methods are accurate and within ANSI standards of 2%. What is very different in the AMI meter is the algorithm used to calculate the readings from the sensor into the indicated display. The analog meter is a type of “totalizing” meter just like a gas pump. The AMI meter uses sensor data, which has to be averaged by a mathematical calculation and then registered into memory and on the LCD display. The gas pump has a weight and measures standards sticker to assure the Consumer they are getting what they paid for, there is no such concept on an AMI meter.

Meter accuracy and your bill

- Navigant Consulting's Report in 2010 is referenced on the ITRON web site. But there were two different meter manufacturers ITRON and Landis+Gyr. The report did not differentiate performance characteristics between manufacturers
- The Navigant Report tried to explain the billing inaccuracies using complex mathematic explanations and reference to "degree" days but the degree variance was typically within 10% year over year, yet this did not explain power bills increasing as much as 25%-40% higher year over year.
- Their test lab control set setups were done at room temperatures as shown in pictures in the report
- There was no field test at various temperatures for accuracy, nor was there a test using electric motors, they only lab tested with light bulbs, two completely different variables.

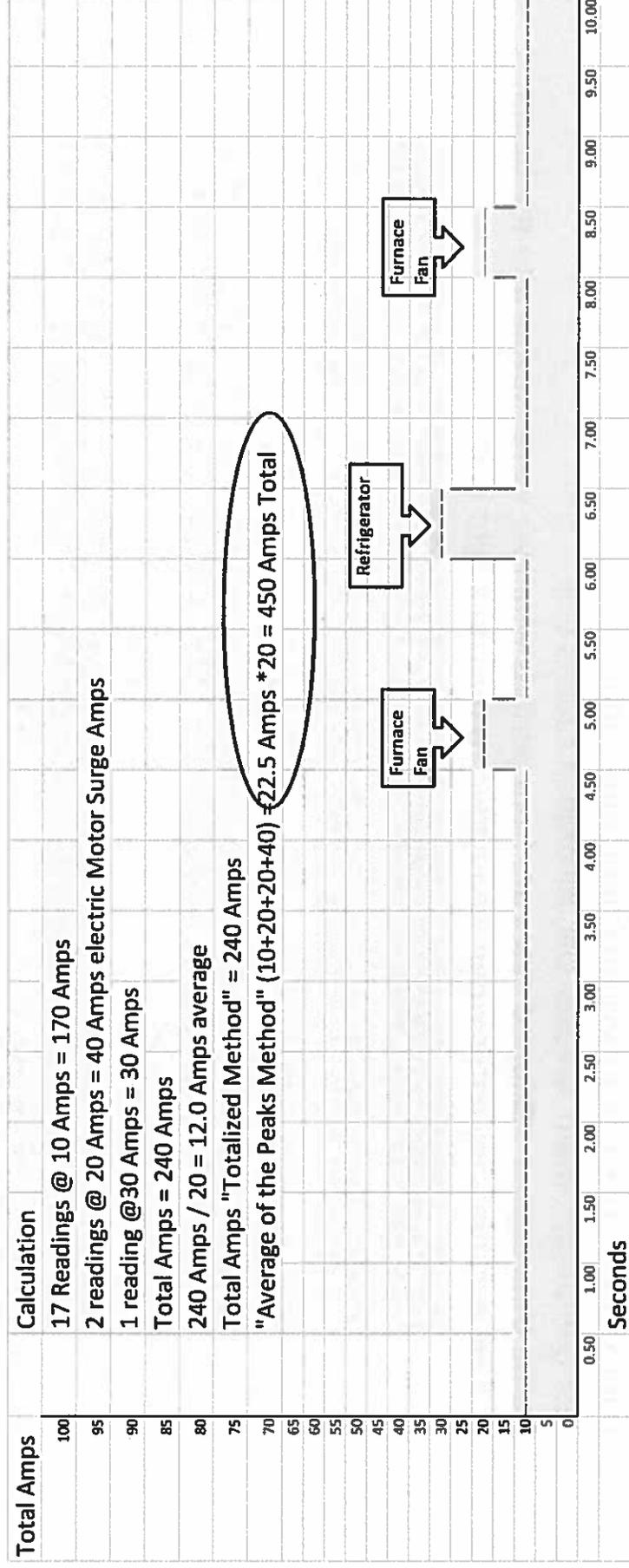


- Electric Motor Current Draws are different than a light bulb
- There is a short .5 to .6 sec burst of current needed to start an electric motor, so a 5 amp rated motor may need 8-9 amps to get rotating up to rated speed
 - If the utility is measuring peak current and averaging this over a window of time you can skew the average when you combine the two types of loads.
 - Only the utility knows the math in the software
 - If you have "Energy Star" refrigerator/freezer it starts and stops frequently, and so the skew of the average is worse, imagine the impact on the average reading after 3-5 motors start and stop in the sample window.

Why is the Bill Higher?

It depends on how it is calculated

Totalized versus Average of the Peaks



The utilities will not likely reveal how they are doing this calculation, unless forced under court order

Meter accuracy and your bill – Power Required to Run the AMI Meter

Data Source – DTE Energy Insight Phone Application

Test Conditions: Main breaker ON, All branch circuits OFF

Home Unoccupied – Skipped dates are from periods when we were moving into the home and we excluded any dates when we needed to turn on a light bulb

Date	kWh Consumed by the AMI Meter
October 17, 2016	1.8 kWh
October 18, 2016	3.0 kWh
October 19, 2016	2.2 kWh
October 20, 2016	3.2 kWh
October 21, 2016	2.1 kWh
October 25, 2106	2.4 kWh
October 26, 2016	2.2 kWh
October 27, 2016	2.1 kWh
October 28, 2016	2.3 kWh
Average Daily AMI kWh Use	2.37 kWh @ 0.13 per kWh = \$0.31

Meter accuracy and your bill – Power Required to Run the AMI Meter

Based on real collected data, not extrapolated calculations

- At ~ \$.31 per day cost just to run the AMI meter this equals an added \$113.15 per year per customer for 865 kWhs annually
- If you consider the total annual AMI kWh use for the 2.1 M DTE customers @ \$113.15 this is an added \$238,350,000 in added revenue to DTE to run the AMI meters, fully paid by the customer base
- If you also consider the Annual kWh consumed by just running the AMI meters in the 2.1 Million Customers in the DTE territory this equals an added 1,816,605,000 kWh in required added generation capacity just to run the AMI meters.

Conclusion: There is absolutely no evidence the AMI Meter program saves energy in kWh or money, in fact it only drains the bank accounts of the consumer and pads the revenue of the utility.

The only way the AMI program will save kWh's is to use it to ration power to consumers via Demand Response/Time of Use rate structures at 4-8 X normal rates where the elderly, disabled and young families with a parent and small children at home can least afford it or do without power during the Demand Response/Time of Use period. Under this scenario the AMI program is the largest fleecing of the consumer to ever exist.

ITRON AMI Meter Life Expectancy

- New to the home consumer is the deployment of an electronic power meter on the exterior of the home. There is no realistic expectation that these new meters will last 20 years of more.
- The miniaturization of electronics constantly leaps forward in reducing the size of an electronic design. This causes the industry to obsolete certain logic chips sets within one or two years from the date of the original start of manufacturing.
- With obsolescence comes the risk that direct replacement of a meter after 2 years with the same components is unlikely or the required software compatibility will be restrained.
- Electronic circuits do fail under the extremes of temperature and humidity. The meters are not hermetically sealed to keep out dust and moisture. There are conformal coatings on the circuit boards which indicates they had issues with moisture on the chip sets in the past, the whole board is not covered with a conformal coating but only on special areas.
- The number of incoming power surges hitting the Varistor on the power supply board will degrade this component over time to where it no longer protects the circuit and increasingly permits power line quality issues to enter the circuit boards. This can cause an exacerbation of the “Dirty Electricity” issues already present or circuit board failures .
- The LCD will be hard to read after exposure to temperature extremes and humidity in less than 5 years. LCD’s are very sensitive to low temperatures, and they dim considerably below 0 ° F

Overall Observations of the ITRON Meter

- After a hard look at the design and construction of this ITRON meter there are the following observations
 - The biggest weakness is in the power disconnect, it suffers from a small surface area for the disconnect contact and would be prone to excessive heating and likely result in contact pitting and carbon deposits that are not readily visible by the customer and there is not a sensory circuit that could detect it and report it to the consumer or the utility. This design would be prone to creating unpredicted fires.
 - The second weakness which is causing thousands to become ill is the lack of a common mode and differential filtering of the SMPS oscillations being injected from the meter onto the house wiring circuit, thus making the whole house into an antenna with dangerous RFI/EMI. Overall costs for the needed components would be around \$1.50 per meter/circuit board. There are ways to design a SMPS without these filters but this design would need to have a solid ground reference to earth, but this meter design and construction does not permit an earth ground so this scenario is unfeasible.
 - The power required to run the AMI meter is borne by the homeowner, this was never disclosed to the public that their bill will go up by over ~\$115.00 per year just to power the meter. Also the added load on generating capacity was never used in the justification for the investment required for the deployment of AMI. This gives a false impression on the AMI program reducing energy consumption. It does not save any energy for the consumer or the utility. The current Analog meter does not cost the consumer or the utility any energy to power it.

Overall Observations of the ITRON Meter

- Additional observations
 - The privacy and security of the full AMI program is another exposure that has not been fully disclosed to the consumer. The broad based scenario of incorporating the Internet of Things (IoT) in the home environment and linking it to a meter creates increased exposure of personal information to third parties without consent. The fact that the consumer agreed to the service agreement of the utility for provision of electricity also implies the the consumer has by default agreed to the disclosure of personal information to places not named should be a large concern. Image if this was the case when you buy gas for your vehicle. Should the gas provider require you to ID the type of vehicle you are driving before the pump is tuned on?
 - The utility consistently states the RF emissions of the meters meet FCC requirements, this is a misleading statement, FCC requirements are for the effects of enough ionizing power to cause the brain to heat up 1° C. There have been over 800 peer reviewed independent studies not funded by the industry that have linked this type of low level non ionizing RF radiation to a group of diseases including brain cancer, Parkinson's, Alzheimer's, high blood pressure, Tinnitus, skin rashes and open sores as an example. Industry funded studies do not concur with these findings so this adds to confusion on the health effects attributed to the meters. I have personally met many of the affected consumers and this is no joke or set of psychological conditions.
 - The fact that there is a set of circuit boards in a power meter at all is a large risk, the circuit boards would not be able to withstand a lightning strike or a power surge without an explosive reaction and likely melting of the circuits. This would lead to total destruction of the unit and lead to a possible fire.

Has the investment in new AMI meters benefited the consumer?

- The utility is passionate about the need for AMI. Their primary benefits are:
 - Reduction in meter reader workforce costs
 - The has been no rebate or discount to the consumer for this savings the utility gains, where did this savings go?
 - Ability to monitor the expense of outages
 - This may marginally benefit the consumer but communications of their outage existed before via phone anyway. However the savings to the utility has never been remunerated and returned to consumers.
 - Ability to turn off services to non paying consumers without out a “Truck Roll”
 - This will save the utility money, yet the savings are not passed on to the consumer, every time a truck roll is avoided the utility should be sending a check equal to that costs savings to the consumer base.
 - Ability to save energy
 - The AMI meters themselves increases demand for energy capacity and costs the consumer ~115,000 per year in added costs they were never told about. In addition there is a question of fairness in reporting how inductive loads are calculated in the meter readings. The lack of transparency in the data manipulations for inductive loads versus resistive loads has never been elaborated by the utility.
 - The only way this will save energy is to require 100% compliance to Time of Use/Demand response to ration power to consumers. Demand Response policies have never been explained and enumerated to the consumer and many of these policies are already in the pipeline. Federal law requires that if DR is made available in a service area it is to be 100% enforced.
 - Ability to incorporate alternative energy sources
 - This only applies to the utility. The utilities are blocking consumers the ability to sell back to the grid. The utilities have increased their rates to build alternative energy sources and increased their billing to pay for these facilities. However they are also charging the current rates to the customer for what they now obtain for free.
 - Ability to dynamically manage energy demands
 - The use of a network topology for meter reading is a benefit to the utility to possibly obtain real time information to match capacity to demands. However the AMI system is only communicating power consumption on a daily basis so how is this to become a real time system unless the AMI meters begin transmitting demand at an almost constant rate. This has never been communicated to the consumer. The load of data collected if in a real time system would overwhelm the ability to process the data. If the intent is managing capacity to demand is the reason for deploying AMI then collecting the data once a day will not ever accomplish the goal to match capacity to demand. This is the critical flaw in the AMI concept at the point of use and the whole reasoning to deploy AMI and fails to accomplish this goal of dynamically managing the grid when only collecting data once a day. Since the AMI enabled Gas meters rely on the electric AMI meter, and the AMI electric meter justification is dubious with only daily readings the sum of the benefits of AMI is only related to elimination of manual meter readers, which has not resulted in any consumer savings.
 - The need for AMI to reduce energy consumption
 - The most recent report from Michigan LARA estimate from 2014-2015 year predicts residential electric energy consumption as flat, with commercial consumptions reducing and industrial sectors growing by 3 % with a combined increase of 0.8 %. The revised report for 2016-2017 still states the growth as lower than historic values. Why do we need hundreds of millions of added costs to support a flat demand curve? Is this a solution looking for a problem?

